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PATEL, JAYESH A				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/529,682

**Applicant(s)**

MAACK, HANNS-INGO

**Examiner**

JAYESH PATEL

**Art Unit**

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 August 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### ***Response to Arguments***

Applicant's arguments, see remarks pages 18-25, filed 08/04/2009, with respect to the rejection(s) of claim 1 under 35 U.S.C 103 have been fully considered and are persuasive. Applicant argues the combination of Booyesen and Aizaki based on the differing optics on page 21. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Booyesen et al. (US 6921200) and Karunen (US 20030151683). In view of the applicant's remarks regarding the withdrawal of the rejection based on Chan (US 6355420) is considered and the rejection based on Chan is withdrawn from the previous action dated Oct 14 2008. The rejection is presented below.

### ***Specification***

Applicant is reminded of the proper language and format for an abstract of the disclosure. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details. The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can

be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). **An abstract on a separate sheet is required.**

#### Content of Specification

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.
- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) The Names Of The Parties To A Joint Research Agreement: See 37 CFR 1.71(g).
- (e) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.
- (f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
  - (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject

matter of the claimed invention. This item may also be titled "Technical Field."

- (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.
- (h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.
- (j) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation.

There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).

- (k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).
- (l) Sequence Listing. See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

The specification does not contain the above sections such as brief summary of the invention, detailed description of the invention etc please follow the above guidelines in formatting the specification.

### ***Claim Objections***

The claims are objected to because the lines are crowded too closely together, making reading difficult. Substitute claims with lines one and one-half or double spaced on good quality paper are required. See 37 CFR 1.52(b) 2 ii. The font size of the claims is small and therefore makes the claims hard to read.

Claim 10 is objected to being dependent from claim 15 which is impossible. As understood by the examiner, Claim 10 should depend from claim 9.

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

**Claim 19** is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 19 as a whole define(s) **[a machine accessible medium]** which encompasses "[a] transitory, propagating signal and a signal is not a "process, machine, manufacture, or composition of matter." Those four categories define the explicit scope and reach of subject matter patentable under 35 U.S.C. § 101; thus, such a signal

cannot be patentable subject matter.” (in re Nuijten, 84 USPQ2d 1495 (Fed. Cir. 2007)).

**Similarly Claim 20** is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim **20** defines **[a computer software product]** which encompasses (a computer program or computer executable code or software per se). However, the claim does not define a “computer-readable medium or computer-readable memory” and is thus non-statutory for that reason (i.e., “When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized” – Guidelines Annex IV). The scope of the presently claimed invention encompasses products that are not necessarily computer readable, and thus NOT able to impart any functionality of the recited program. The examiner suggests amending the claim(s) to embody the program on “computer-readable medium” or equivalent; assuming the specification does NOT define the computer readable medium as a “signal”, “carrier wave”, or “transmission medium” which are deemed non-statutory (refer to “note” below). Any amendment to the claim should be commensurate with its corresponding disclosure.



***Claim Rejections - 35 USC § 112***

Claims 15-18 and 20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 15,16 and 20 recites the limitation "a binning factor of unity **or greater**" is not described in the specification. The specification on page 2 line 15 recite a binning **factor of 1** however does not recite **or greater**. The above limitation thus creates new matter situation. Claims 17-18 depends on claim 16 therefore they are rejected.

Claim 19 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not have the support or disclose "a machine readable medium".

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 8-14 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Booyesen et al. (US 6921200) hereafter Booyesen in view of Karunen et al. (US 20030151683) hereafter Karunen.

1. Regarding claim 1, Booyesen discloses a method of operating an imaging device (**CCD sensor at Col 7 line 38**) with a two-dimensional field of image sensors (**the CCD consisting of rows and columns at Col 7 lines 20-22**) as well as an evaluation unit which is capable of reading out and processing the pixel signals (**"read out" and processor at Col 7 lines 57-58**), representing output signals of image sensors combined by a binning operation (**"binning process" at Col 7 line 52**), at a maximum rate of no more than  $G_{max}$  (**the "data rate" at Col 7 line 57**), comprising:

presetting, on said imaging device, at least one parameter in order to define a sub-region of the field (**"smallest binned super pixel" at Col 7 line 65**); and

deriving, by said imaging device, any remaining parameters for defining the sub-region as well as a binning factor  $b$  and an imaging rate  $f$  (**Col 7 lines 55-65, Col 8 lines 5-10 where  $2 \times 2$  binned pixel is the binning factor  $b$ , the speed of the imaging information represents the imaging rate  $f$** ) said

deriving being performed, in view of the at least one preset parameter (**Col 8 lines 5-10 where the optimum resolution represents the preset parameter**), in such a manner that the maximum rate  $G_{max}$  (**the “data rate” at Col 7 line 57**), of the evaluation unit is not exceeded (**the data will not be exceeded or will always be less than the maximum data rate due to the noise in the system as disclosed at Col 7 line 56-58**) during the reading out of all pixel signals (**“read out” and processor at Col 7 lines 57-58**) from the sub-region (**“smallest binned super pixel at Col 7 line 65 is the sub-region**). Booyesen discloses 2x2 binning which is technically a binning factor, however **does not recite in exact claim language** “binning factor”.

Karunen discloses a binning factor ( **$X*Y$** ) in the CCD array exposed to the radiation signals at **para 0043,0048** and Karunen further disclose determining the preliminary binning factor in **para 0046**. Karunen discloses that the CCD imaging equipment has improved signal to noise ration with binning at **para 0059** and further discloses that the readout efficiency can be increased at **para 0055** (motivation). Karunen and Booyesen are from the same field of endeavor and are analogous art, therefore it would be obvious for one of ordinary skill in the art at the time the invention was made to have used the teachings of Karunen in the Imaging apparatus of Booyesen for the above reasons.

2. Regarding claim 2, Booyesen and Karunen disclose the method as claimed in claim 1. Booyesen at (**Col 7 lines 34-40 where two by two pixels are discloses**

**representing a rectangular array)** discloses wherein the image sensors are arranged in a periodic pattern in a rectangular field, the sub-region having a rectangular shape with its sides extending parallel to the edges of the field.

3. Regarding claim 3, Booyesen and Karunen disclose the method as claimed in claim 1. Booyesen discloses wherein the image sensors are X-ray sensors (**Col 5 lines 63-64 where the X-rays strike the camera with CCD therefore the image sensors are x-Ray sensors or sensing x-rays**). Karunen also discloses the CCD array exposed to radiation (x-rays) as seen in claim 1.

4. Regarding claim 4 see the explanation of claim 1. Booyesen further discloses controller controlling different modes of the processor and also serves as a built in test mode at (**Col 8 lines 5-10 and 18-20**) which meets the limitations of the service mode of the imaging device.

5. Regarding claim 5, Booyesen and Karunen discloses the method as claimed in claim 1. Booyesen discloses the smallest binned super pixel of 2X2 for the data transfer rate at (**Col 7 lines 63-67**) which meets the limitation of changing of the binning parameter to the optimum binning parameter such that the minimum data transfer occurs as explained in claim 1 and therefore the rate does not exceed the maximum rate of Gmax.

6. Regarding claim 6 see the explanation of claim 1. Booyesen discloses further wherein the evaluation of the pixel signals is performed by means of calibration images (**Fig 16 Calibration start and end which shows the calibration images are captured**) related to the sub-region.

7. Regarding claim 8, Booyesen and Karunen disclose the method as claimed in claim 6. Booyesen discloses further wherein dark images of the sub-region are generated (**Fig 16 where the dark values with respect to the pixels are generated**) and used as calibration images.

8. Claim 9 is a corresponding imaging device claim of claim 1. See the explanation of claim 1.

9. Regarding claim 10 see the explanation of claim 1. Booyesen discloses further comprising an X-ray apparatus with an adjustable diaphragm arrangement in the beam path (**Figs 2 and 5 and Col 4 lines 38-40 where the apparatus is disclosed**), at least one adjustment parameter of the diaphragm device being (**X-ray beam width controller adjusts the diaphragm so the amount of x-rays enter the patients body at Col 4 lines 59-67**).

10. Regarding claim 11, Booyesen and Karunen discloses the method as claimed

in claim 1. Booysen discloses the parameters for defining the sub-region (**Col 8 lines 5-10 where 2X2 binned pixel is the parameter for defining the sub-region**) wherein said any remaining parameters amount to one or more parameters.

**11.** Regarding claim 12, Booysen and Karunen disclose the method as claimed in claim 4. Booysen further discloses controller controlling different modes of the processor and also serves as a built in test mode at (**Col 8 lines 5-10 and 18-20**) which meets the limitations of wherein said operating, including the defining in said such a manner, occurs in a mode distinct from said service mode.

**12.** Regarding claim 13, Booysen and Karunen disclose the method as claimed in claim 1. Booysen discloses the binning factor and data rate at (**Col 7 lines 34-40 and 54-67**) are determined or calculated meeting the claim limitations of claim 13.

**13.** Claim 14 is a corresponding device claim of claim 13. See the explanation of claim 13.

**14.** Claim 19 is a machine accessible medium claim of claim 1. See the explanation of claim 1.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Booyesen in view of Karunen and in further view of Jalink et al. (US 5844242) hereafter Jalink.

15. Regarding claim 7, Booyesen and Karunen disclose the method as claimed in claim 6. Booyesen disclose the calibration images taken using the dark image signals as seen in **fig 16**, however is silent and does not expressly recite characterized in that sub-regions are selected which cover the entire field of the image sensors; for each of the sub-regions related calibration images are generated with predetermined imaging parameters; from the calibration images of the sub-regions there are generated overall calibration images for the imaging parameters which are related to the entire field of image sensors; calibration images for an arbitrary new sub-region are acquired from the overall calibration images.

Jalink discloses the capturing of the dark current images (**calibration or reference image**) and further disclose the integration all CCD arrays under dark conditions (**overall calibrated image is generated**) and repeating the steps with the different sub-image data at (**Col 7 lines 1-67 through Col 8 lines 67**). The system and method as disclosed by Jalink produces the correction data array and for all subsequent testing the images are normalized with the correction data at giving accurate results each time (**Col 7 lines 1-8**). Booyesen, Karunen and Jalink are from the same field of endeavor and are analogous art therefore it

would have been obvious for one of ordinary skill in the art at the time the invention was made to have used the teachings of Jalink in the method and system of Booyesen for the above reasons.

Claims 15-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Booyesen in view of Karunen and in further view of Shipp (US 5394187) hereafter Shipp as best understood by the examiner.

**16.** Regarding claim 15, Booyesen and Karunen discloses an imaging device as explained in claim 9. Booyesen and Karunen are however silent and does not disclose in exact claim language a binning factor of unity or greater.

Shipp discloses a binning factor of nine with the pixel binning of 3X3 matrix or array and further discloses a binning factor of  $n^2$  with the binning factor of  $n \times n$  thus if the value of  $n=1$ --- $n$  than it would meet the limitation of the binning factor of unity or more than one at **Col 6 lines 35-46**. Shipp discloses that the signal to noise ratio increases as the binning factor increases at **Col 6 lines 35-46**. Shipp, Booyesen and Karunen are from the same field of endeavor and are analogous art (**CCD array binning and readout**), therefore it would be obvious for one of ordinary skill in the art at the time the invention was made to have used the teachings of Shipp in the imaging device of Booyesen and Karunen for the above reasons.



17. Claim 16 is a corresponding method claim of claim 15. See the explanation of claim 15.

18. Regarding claim 17 see the explanation of claim 15.

19. Regarding claim 18 see the explanation of claim 15. Booyesen disclose further wherein said deriving comprises calculating **one** or more parameters from among said binning factor, said imaging rate, and said parameters for defining the sub-region that were not preset in said presetting **(Col 7 lines 55-65, Col 8 lines 5-10 where 2X2 binned pixel is the binning factor b, the speed of the imaging information represents the imaging rate f)** said deriving being performed, in view of the at least one preset parameter **(Col 8 lines 5-10 where the optimum resolution represents the preset parameter)**.

20. Claim 20 is a corresponding computer software product claim of claim 15. See the explanation of claim 15.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAYESH PATEL whose telephone number is (571)270-1227. The examiner can normally be reached on 5-4-9.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on 571-272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

11/20/2009  
/JAYESH PATEL/  
Examiner, Art Unit 2624

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